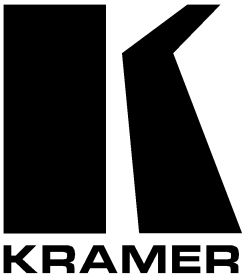
Kramer Electronics, Ltd.



USER MANUAL

Models:

103AV, *1:3 Audio-Stereo / Video DA*

104M, *1:4 Microphone Amplifier*

105A, *1:5 Stereo Audio DA*

105S, *1:5 High Resolution s-Video DA*

105V, *1:5 High Resolution Video DA*

105VB, *1:5 High Resolution Video DA*

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1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 500-plus different models now appear in 8 Groups[1], which are clearly defined by function.

Congratulations on purchasing one or more of the following Kramer TOOLS: **103AV**, *1:3 Audio-Stereo / Video DA*, **104M**, *1:4 Microphone Amplifier*, **105A**, *1:5 Stereo Audio DA*, **105S**, *1:5 High Resolution s-Video DA*, **105V**, *1:5 High Resolution Video DA* and **105VB**, *1:5 High Resolution Video DA*

Which are ideal for:

- Duplication and other studio applications requiring multiple outputs of identical quality
- Professional presentation and display systems, CCTV and home theater applications and field production applications

The package includes the following items:

- **103AV**, and/or **104M**, and/or **105A**, and/or **105S**, and/or **105V**, and/or **105VB**
- Power adapter (12V DC Input)
- This user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables[3]

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

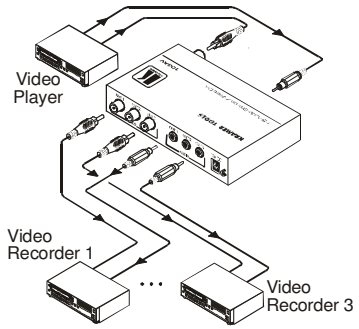
2 Download up-to-date Kramer user manuals from the Internet at this URL: http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

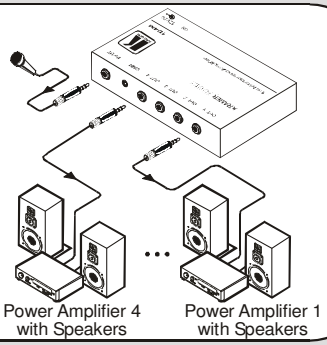
Step 1: Connect your Kramer TOOL

1. Connect the source to the input
2. Connect the outputs to the acceptors
3. Connect the power
4. Adjust the audio and/or video level trimmers, by inserting a screwdriver into the appropriate small hole and rotating it

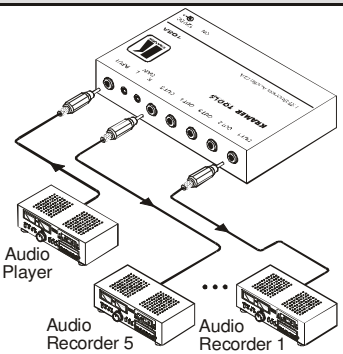
103AV



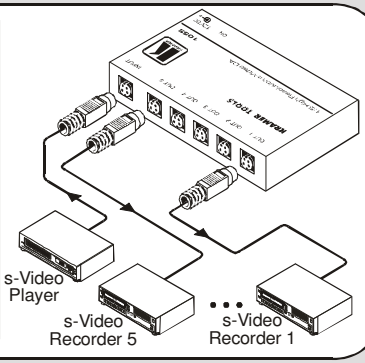
104M



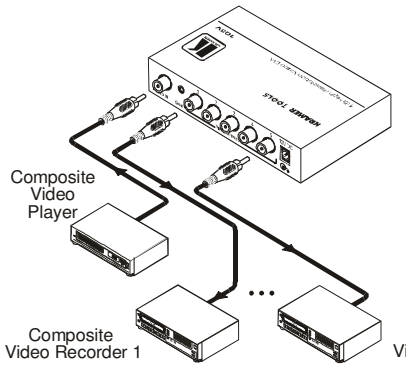
105A



105S



105V/105VB



The 105V has RCA connectors and the 105VB has BNC connectors

3 Overview

The following sections describe the:

- **103AV**, *1:3 Audio-Stereo / Video DA*, which accepts one audio input and one video input, provides correct buffering and isolation and distributes these signals to three identical audio and video outputs (see section 4)
- **104M**, *1:4 Microphone Amplifier*, which accepts a single Mic input that is amplified and distributes it to four identical outputs (see section 5)
- **105A**, *1:5 Stereo Audio DA*, which accepts one stereo audio input and distributes it to five identical outputs (see section 6)
- **105S**, *1:5 High Resolution s-Video DA*, which accepts one s-Video signal and distributes it to five identical outputs (see section 7)
- **105V**, *1:5 High Resolution Video DA*, which accepts one video input and distributes it to five identical outputs (see section 8)
- **105VB**, *1:5 High Resolution Video DA*, which accepts one video input and distributes it to five identical outputs (see section 9)

3.1 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise-levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your Kramer machines away from moisture, excessive sunlight and dust

Caution – No operator-serviceable parts inside unit.

Warning – Use only the Kramer Electronics input power wall adapter that is provided with this unit[1].

Warning – Disconnect power and unplug unit from wall before installing or removing device or servicing unit.

1 For example: model number AD2512C, part number 2535-000251

4 Your 103AV, 1:3 Audio-Stereo / Video Distributor

The Kramer **103AV** is a compact distribution amplifier for composite video and unbalanced stereo audio signals. It will take one input, provide correct buffering and isolation, and distribute the signal to three identical outputs.

The **103AV**:

- Has a high video bandwidth of 415MHz to ensure transparent operation even in the most critical applications
- Uses RCA connectors for composite video, and 3.5mm mini jack connectors for the unbalanced stereo audio
- Includes audio and video level (gain) controls
- Is 12V DC fed

Figure 1 and Table 1 define the **103AV** *1:3 Audio-Stereo / Video DA*:

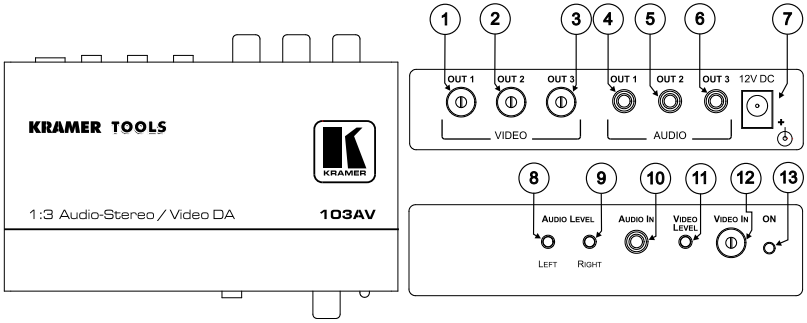


Figure 1: 103AV Audio-Stereo / Video DA

Table 1: Features and Functions of the 103AV Audio-Stereo / Video DA

#	Feature		Function
1	*VIDEO*	*OUT1* RCA Connector	Connects to the video acceptor 1
2		*OUT 2* RCA Connector	Connects to the video acceptor 2
3		*OUT 3* RCA Connector	Connects to the video acceptor 3
4	*AUDIO*	*OUT1* Mini Phone Connector	Connects to the unbalanced stereo audio acceptor 1
5		*OUT 2* Mini Phone Connector	Connects to the unbalanced stereo audio acceptor 2
6		*OUT 3* Mini Phone Connector	Connects to the unbalanced stereo audio acceptor 3
7	*12V DC*		+12V DC connector for powering the unit
8	*AUDIO LEVEL*	*LEFT* Trimmer[1]	Adjusts the left channel audio gain
9		*RIGHT* Trimmer[1]	Adjusts the right channel audio gain
10	*AUDIO IN* Mini Phone Connector		Connects to the unbalanced stereo audio source
11	*VIDEO LEVEL* Trimmer		Adjusts the gain of the video outputs
12	*VIDEO IN* RCA Connector		Connects to the video source
13	*ON* LED		Illuminates when the machine is powered

1 Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

5 Your 104M, 1:4 Microphone Amplifier

The Kramer **104M** is a high quality distribution amplifier for dynamic microphone signals. It accepts a microphone input and distributes the signal to four identical line-level outputs.

The **104M**:

- Includes audio level (Gain) control
- Has an S/N ratio of 78dB
- Is 12V DC fed

Figure 2 and Table 2 define the **104M** *1:4 Microphone Amplifier*

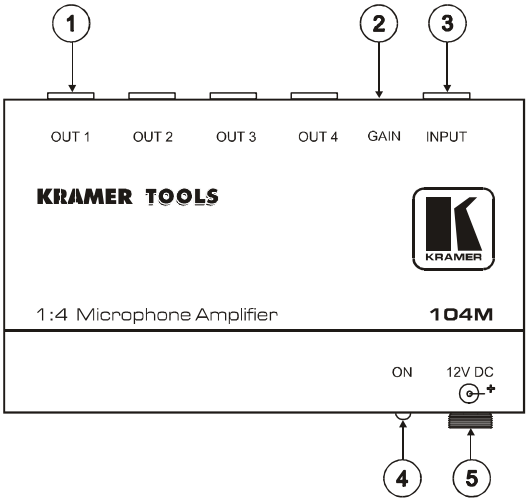


Figure 2: 104M Microphone Amplifier

Table 2: Features and Functions of the 104M Microphone Amplifier

#	Feature	Function
1	*OUT* 6.5mm Phone Connector	Connects to the audio acceptor (from 1 to 4)
2	*GAIN* Trimmer[1]	Controls the audio output level
3	*INPUT* 6.5mm Phone Connector	Connects to the mono microphone audio source
4	*ON* LED	Illuminates when the machine is powered
5	*12V DC*	+12V DC connector for powering the unit

1 Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

6 Your 105A, 1:5 Stereo Audio DA

The Kramer **105A** is a high performance distribution amplifier for unbalanced stereo audio signals using 3.5mm mini jacks. It accepts one stereo input and distributes the signal to five identical stereo outputs.

The **105A**:

- Includes audio left and right level (Gain) controls
- Has an S/N Ratio of 80dB (unweighted)
- Is 12V DC fed

Figure 3 and Table 3 define the **105A** *1:5 Stereo Audio DA*

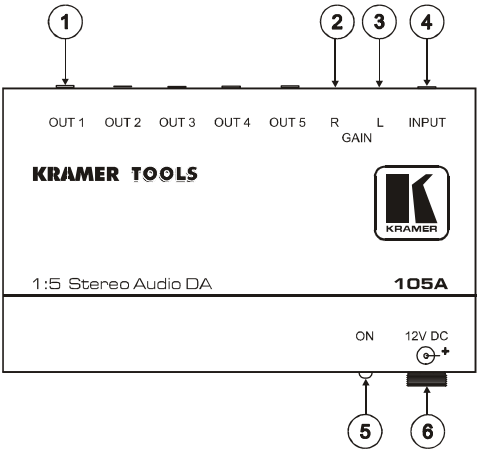


Figure 3: 105A 1:5 Stereo Audio DA

Table 3: Features and Functions of the 105A 1:5 Stereo Audio DA

#	Feature		Function
1	*OUT* Mini Phone Connector		Connects to the audio acceptor (from 1 to 5)
2	*GAIN*	*R* Trimmer[1]	Adjusts the right channel audio gain
3		*L* Trimmer[1]	Adjusts the left channel audio gain
4	*INPUT* Mini Phone Connector		Connects to the stereo/balanced mono audio source
5	*ON* LED		Illuminates when the machine is powered
6	*12V DC*		+12V DC connector for powering the unit

1 Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

7 Your 105S, 1:5 High Resolution s-Video DA

The Kramer **105S** is a high performance s-Video (Y/C) distribution amplifier. It accepts one input, provides correct buffering and isolation, and distributes the signal to five identical outputs using 4-pin s-Video connectors.

The **105S**:

- Has a bandwidth (Y) of 230MHz to ensure transparent operation even in the most critical applications
- Is 12V DC fed

Figure 4 and Table 4 define the **105S** *1:5 High Resolution s-Video DA*

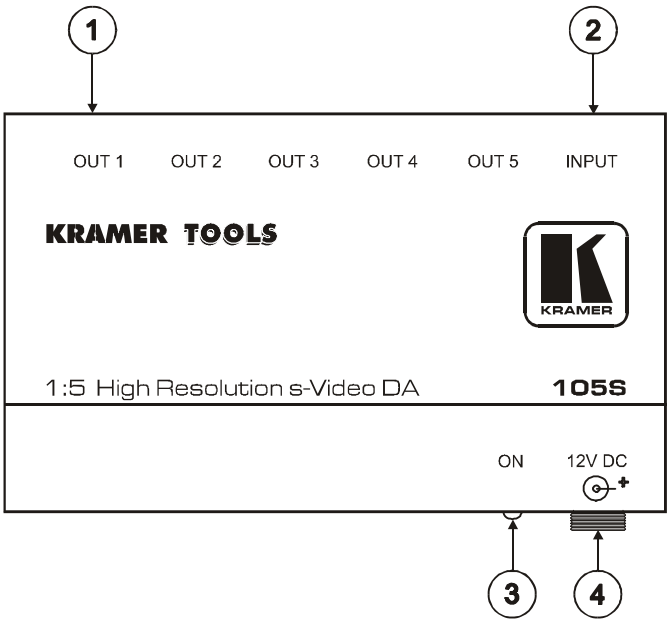


Figure 4: 105S 1:5 High Resolution s-Video DA

Table 4: Features and Functions of the 105S 1:5 High Resolution s-Video DA

#	Feature	Function
1	*OUT* 4p Connector	Connects to the audio acceptor (from 1 to 5)
2	*INPUT* 4p Connector	Connects to the stereo/balanced mono audio source
3	*ON* LED	Illuminates when the machine is powered
4	*12V DC*	+12V DC connector for powering the unit

8 The 105V, 1:5 High Resolution Video DA

The Kramer **105V** is a high performance distribution amplifier for composite video signals. It accepts one input, provides correct buffering and isolation and distributes the signal to five identical outputs.

In particular, the **105V**:

- Has a bandwidth of 400MHz to ensure transparent operation even in the most critical applications
- Has RCA connectors
- Has video level (Gain) control
- Is 12V DC fed

Figure 5 and Table 5 define the **105V** *1:5 High Resolution Video DA*

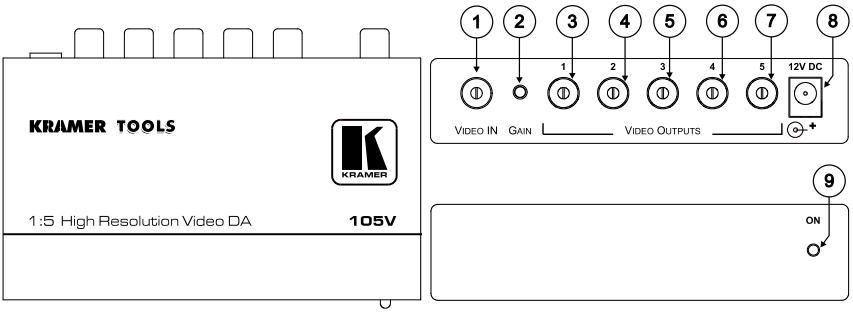


Figure 5: 105V 1:5 High Resolution Video DA

Table 5: Features and Functions of the 105V 1:5 High Resolution Video DA

#	Feature		Function
1	*VIDEO IN* RCA Connector		Connect to the composite video source
2	*GAIN* Trimmer[1]		Control the gain of the video outputs
3	*VIDEO OUTPUT* RCA Connectors	*OUT 1*	Connect to composite video acceptor 1
4		*OUT 2*	Connect to composite video acceptor 2
5		*OUT 3*	Connect to composite video acceptor 3
6		*OUT 4*	Connect to composite video acceptor 4
7		*OUT 5*	Connect to composite video acceptor 5
8	*12V DC*		+12V DC connector for powering the unit
9	*ON* LED		Illuminates when the machine is powered

1 Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

9 The 105VB, 1:5 High Resolution Video DA

The Kramer **105VB** is a high performance distribution amplifier for composite video signals. It accepts one input, provides correct buffering and isolation and distributes the signal to five identical outputs.

In particular, the **105VB**:

- Has a bandwidth of 400MHz to ensure transparent operation even in the most critical applications
- Has BNC connectors
- Includes video level (Gain) control
- Is 12V DC fed

Figure 6 and Table 6 define the **105VB** *1:5 High Resolution Video DA*

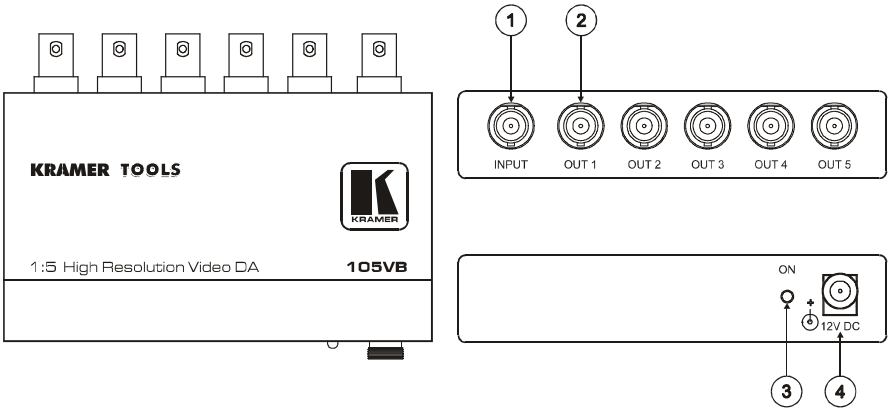


Figure 6: 105VB 1:5 High Resolution Video DA

Table 6: Features and Functions of the 105VB 1:5 High Resolution Video DA

#	Feature	Function
1	*INPUT* BNC Connector	Connects to the composite video source
2	*OUT* BNC Connectors	Connect to the Composite video acceptor (from 1 to 5)
3	*ON* LED	Illuminates when the machine is powered
4	*12V DC*	+12V DC connector for powering the unit

Figure 7 and Table 7 define the **105VB** rear panel:

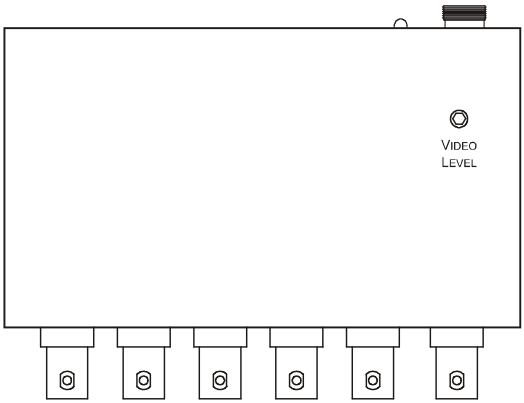


Figure 7: 105VB 1:5 High Resolution Video DA Rear Panel

Table 7: Features and Functions of the 105VB Rear Panel

Feature	Function
VIDEO LEVEL Trimmer[1]	Controls the gain of the video outputs

1 Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

10 Connecting Your Kramer TOOLS

This section describes how to connect your Kramer TOOL.

To connect your **Kramer TOOL**, do the following:

1. Connect a source to the input.
2. Connect the outputs to the appropriate acceptors[1].
3. Connect the 12V DC power adapter to the power socket, and connect the adapter to the mains electricity.
4. Adjust the level trimmers[2], if required.

1 You do not have to connect all the outputs

2 Insert a screwdriver into the small hole and carefully rotate it to adjust the level

10.1 Connecting the 103AV 1:3 Audio-Stereo / Video DA

Figure 8 illustrates how to connect the **103AV**:

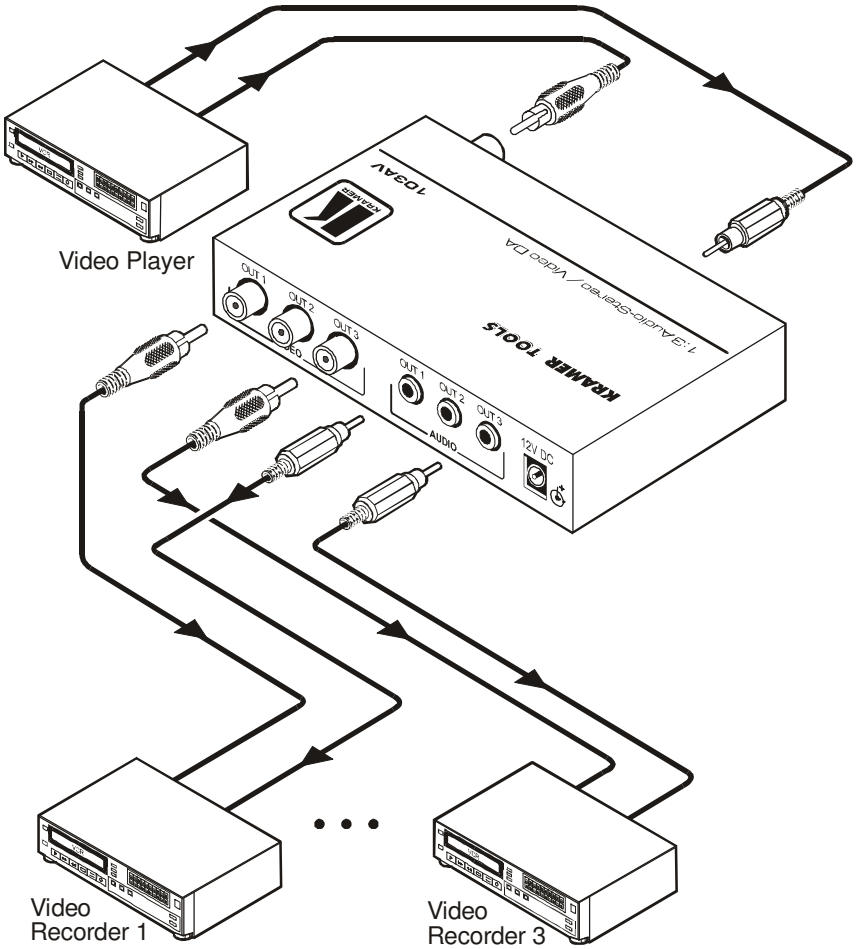


Figure 8: Connecting the 103AV 1:3 Audio-Stereo / Video DA

10.2 Connecting the 104M 1:4 Microphone Amplifier

Figure 9 illustrates how to connect **104M**:

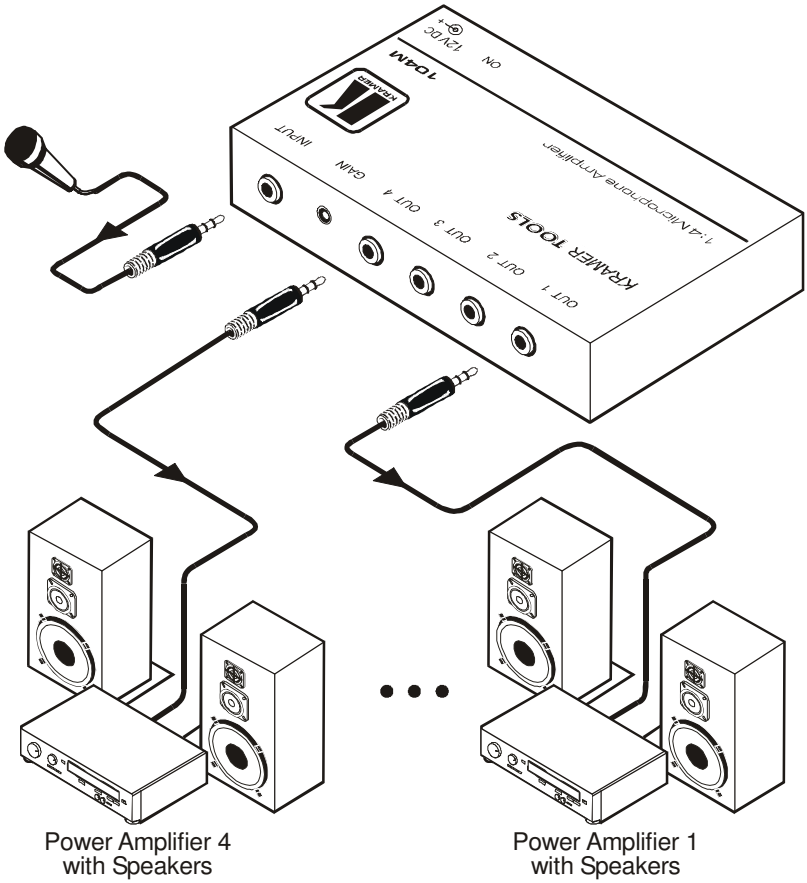


Figure 9: Connecting the 104M 1:4 Microphone Amplifier

10.3 Connecting the 105A 1:5 Stereo Audio DA

Figure 10 illustrates how to connect **105A**:

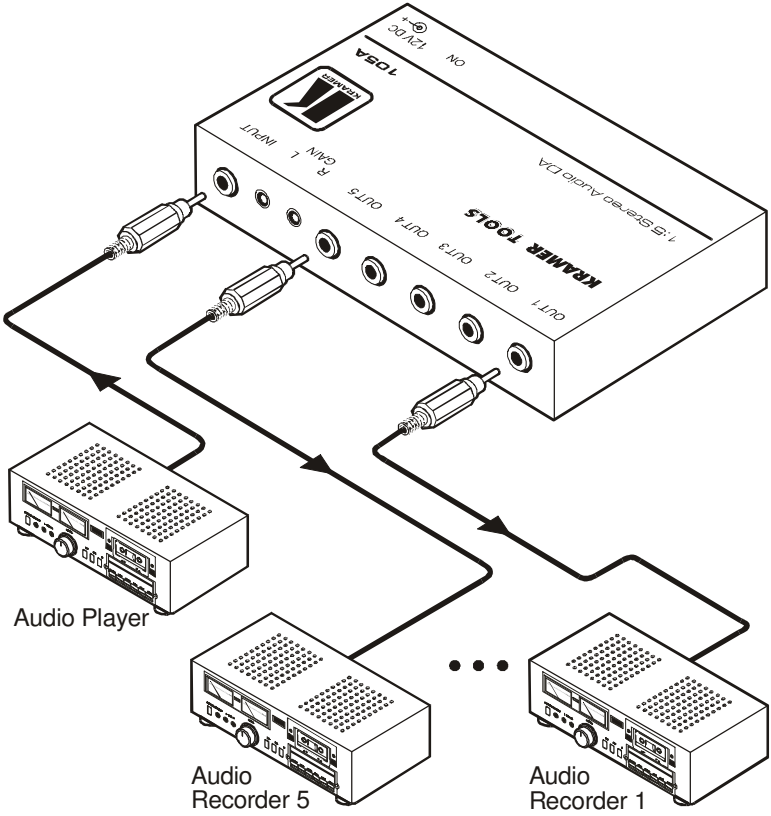


Figure 10: Connecting the 105A 1:5 Stereo Audio DA

10.4 Connecting the 105S 1:5 High Resolution s-Video DA

Figure 11 illustrates how to connect **105S**:

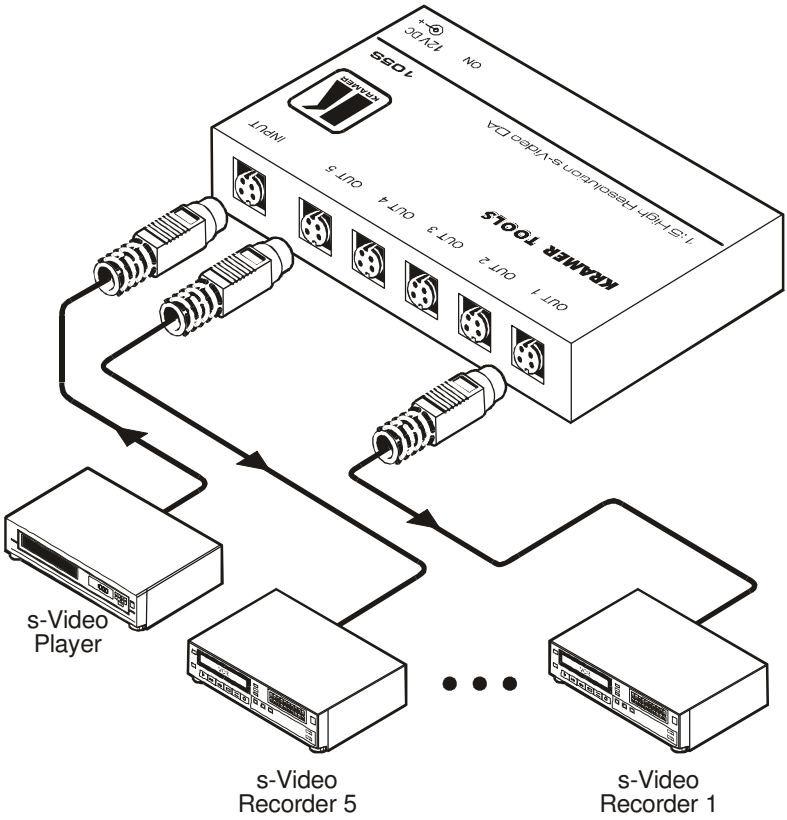


Figure 11: Connecting the 105S 1:5 High Resolution s-Video DA

10.5 Connecting the 105V 1:5 High Resolution Video DA

Figure 12 illustrates how to connect **105V**:

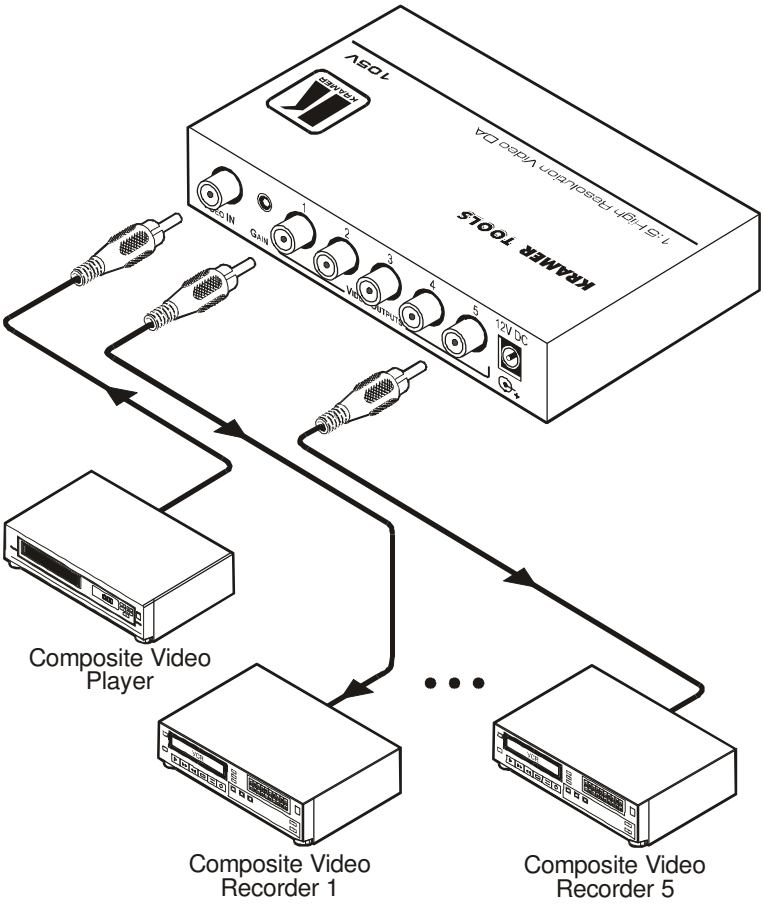


Figure 12: Connecting the 105V 1:5 High Resolution Video DA

10.6 Connecting the 105VB 1:5 High Resolution Video DA

Figure 13 illustrates how to connect **105VB**:

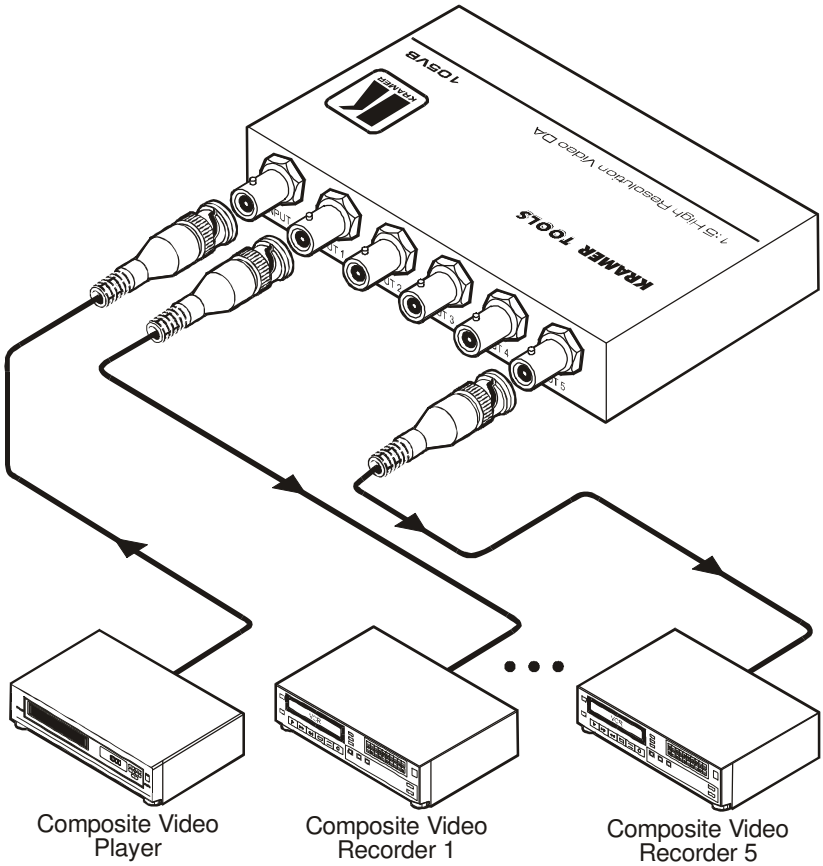


Figure 13: Connecting the 105VB 1:5 High Resolution Video DA

11 Technical Specifications

This section defines the technical specifications[1] for the:

- **103AV**, *1:3 Audio-Stereo / Video DA* (see Table 8)
- **104M**, *1:4 Microphone Amplifier* (see Table 9)
- **105A**, *1:5 Stereo Audio DA* (Table 10)
- **105S**, *1:5 High Resolution s-Video DA* (see Table 11)
- **105V**, *1:5 High Resolution Video DA* (see Table 12)
- **105VB**, *1:5 High Resolution Video DA* (see Table 13)

Table 8: Technical Specifications of the 103AV 1:3 Audio-Stereo / Video DA

INPUT:	1 composite video, 1Vpp/75Ω on an RCA connector 1 audio stereo, 1Vpp/33 kΩ on 3.5-mm mini phone connector	
OUTPUTS:	3 composite video, 1Vpp/75Ω on RCA connectors 3 audio stereo, 1Vpp/50Ω on 3.5mm mini phone connectors	
MAX. OUTPUT LEVEL:	VIDEO: 2Vpp	AUDIO: 5Vpp
VIDEO BANDWIDTH (-3dB):	415MHz	
AUDIO BANDWIDTH (-3dB):	>100kHz	
DIFF. GAIN:	0.05%	
DIFF. PHASE:	0.03 Deg	
K-FACTOR:	<0.05%	
VIDEO S/N RATIO:	73dB	
AUDIO S/N RATIO:	84dB Unweighted	
CROSSTALK:	-70dB @20kHz	
CONTROLS:	Video level: -2.6dB to 5.9dB; audio level: 0dB to 5.9dB	
COUPLING:	VIDEO: AC	AUDIO: AC
AUDIO THD+NOISE:	0.01%	
AUDIO 2nd HARMONIC:	0.003%	
POWER SOURCE:	12 VDC, 50 mA	
DIMENSIONS:	12.1cm x 7.18cm x 2.42cm (4.76” x 2.83” x 0.95”, W, D, H.)	
WEIGHT:	0.28kg. (0.62 lbs.) approx.	
ACCESSORIES:	Power supply, mounting bracket	
OPTIONS:	19” rack adapters	

1 Specifications are subject to change without notice

Table 9: Technical Specifications of the 104M 1:4 Microphone Amplifier

INPUT:	1 mono microphone 5mVpp/10kΩ on a 6.5mm phone connector
OUTPUTS:	4 mono line level 1Vpp/150Ω on 6.5mm phone connectors
MAX. OUTPUT LEVEL:	4.8Vpp
AUDIO BANDWIDTH (-3dB):	37kHz
GAIN CONTROL:	5dB to 54dB
S/N RATIO:	78dB
THD @ 1KHz:	0.1%
POWER SOURCE:	12 VDC, 20mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7” x 2.95” x 0.98”, W, D, H.)
WEIGHT:	0.28kg. (0.62lbs.) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	19” rack adapters

Table 10: Technical Specifications of the 105A 1:5 Stereo Audio DA

INPUT:	1 audio stereo/balanced mono, 1Vpp/33kΩ on a 3.5mm mini phone connector
OUTPUTS:	5 audio stereo/balanced mono 1Vpp/50Ω on 3.5-mm mini phone connectors
MAX. OUTPUT:	5 Vpp (> +4dBm)
AUDIO BANDWIDTH (-3dB):	20kHz
S/N RATIO:	80dB Unweighted
CONTROL:	Left and Right gain rear trimmers (0/+3.5dB range)
COUPLING:	AC
THD:	0.03% (2nd Harmonic)
POWER SOURCE:	12 VDC, 100mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7” x 2.95” x 0.98”, W, D, H.)
WEIGHT:	0.28 kg (0.62 lbs.) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	19” rack adapters

Table 11: Technical Specifications of the 105S 1:5 High Resolution s-Video DA

INPUT:	1 s-Video, 1Vpp/75Ω (Y), 0.3Vpp/75Ω (C), on a 4p connector
OUTPUTS:	5 s-Video, 1Vpp/75Ω (Y), 0.3Vpp/75Ω (C), on 4p connectors
MAX. VIDEO OUTPUT:	2 Vpp (Y)
VIDEO BANDWIDTH (-3dB):	230MHz (Y)
DIFF. GAIN:	0.08%
DIFF. PHASE:	0.12 Deg
K-FACTOR:	0.05%
S/N RATIO:	72dB
COUPLING:	AC
POWER SOURCE:	12 VDC, 100mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7” x 2.95” x 0.98”, W, D, H.)
WEIGHT:	0.28 kg. (0.62 lbs.) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	19” rack adapters

Table 12: Technical Specifications of the 105V 1:5 High Resolution Video DA

INPUT:	1 video, 1Vpp/75Ω on an RCA connector
OUTPUTS:	5 video, 1Vpp/75Ω on RCA connectors
MAX. VIDEO OUTPUT:	1.5Vpp
VIDEO BANDWIDTH (-3dB):	400MHz
DIFF. GAIN:	0.05%
DIFF. PHASE:	0.09 Deg
K-FACTOR:	<0.05%
S/N RATIO:	72dB
CONTROL:	Level: -2dB to +5.6dB
COUPLING:	AC
POWER SOURCE:	12 VDC, 35mA
DIMENSIONS:	12.1cm x 7.18cm x 2.42cm (4.76” x 2.83” x 0.95”, W, D, H.)
WEIGHT:	0.28 kg. (0.62 lbs.) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	19” rack adapters

Table 13: Technical Specifications of the 105VB 1:5 High Resolution Video DA

INPUT:	1 video, 1Vpp/75Ω on a BNC connector
OUTPUTS:	5 video, 1Vpp/75Ω on BNC connectors
MAX. VIDEO OUTPUT:	1.5Vpp
VIDEO BANDWIDTH (-3dB):	400MHz
DIFF. GAIN:	0.05%
DIFF. PHASE:	0.09 Deg
K-FACTOR:	<0.05%
S/N RATIO:	72dB
CONTROL:	Level: -2dB to +5.6dB
COUPLING:	AC
POWER SOURCE:	12 VDC, 35mA
DIMENSIONS:	12.1cm x 7.18cm x 2.42cm (4.76” x 2.83” x 0.95”, W, D, H.)
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	19” rack adapters
WEIGHT:	0.3kg. (0.6 lbs.) approx.

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
   - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   - ii) Product modification, or failure to follow instructions supplied with the product
   - iii) Repair or attempted repair by anyone not authorized by Kramer
   - iv) Any shipment of the product (claims must be presented to the carrier)
   - v) Removal or installation of the product
   - vi) Any other cause, which does not relate to a product defect
   - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.

   Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.
NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.
This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations: Part 15: "Radio frequency devices Subpart B – Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

Kramer Electronics, Ltd.
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E-mail: info@kramerel.com
P/N: 2900-009001 REV 3